

1 **WHAT IS CLAIMED IS:**

2 1. A silent and reduced vibration chainwheel for meshing a chain, and
3 comprising:

4 a disk having an outer edge, two opposite sides and at least one recess;
5 multiple teeth formed with and extending radially out from the outer
6 edge of the disk and forming a bottom land between adjacent teeth and each
7 tooth having a tooth profile with a pitch point; and

8 an energy absorber made of resilient material and mounted at the outer
9 edge of the disk in the at least one recess to absorb shock generated when the
10 chainwheel and the chain contact each other, thereby reducing both vibrations
11 and noise.

12 2. The silent and reduced vibration chainwheel as claimed in claim 1,
13 wherein the at least one recess is implemented with multiple recesses defined
14 respectively in the bottom lands and extending respectively to the pitch points
15 based on a single direction of rotation of the chainwheel, and the energy absorber
16 comprises multiple resilient strips mounted respectively in the recesses in the
17 bottom lands.

18 3. The silent and reduced vibration chainwheel as claimed in claim 1,
19 wherein the at least one recess in the disk is implemented with a continuous
20 annular groove defined around the outer edge and the tooth profiles of the teeth,
21 and the energy absorber comprises a continuous resilient annular strip mounted
22 in the annular groove.

23 4. The silent and reduced vibration chainwheel as claimed in claim 1,
24 wherein the at least one recess is implemented with multiple transverse recesses

1 in each of the bottom lands which extend to the corresponding pitch point based
2 on a single direction of rotation of the chainwheel, and the energy absorber is
3 implemented with multiple resilient rods mounted respectively in the transverse
4 recesses.

5 5. The silent and reduced vibration chainwheel as claimed in claim 1,
6 wherein the at least one recess is implemented with multiple transverse recesses
7 defined in the outer edge of the disk, the bottom lands and the teeth profiles, and
8 the energy absorber is implemented with multiple resilient rods mounted
9 respectively in the transverse recesses.

10 6. The silent and reduced vibration chainwheel as claimed in claim 2,
11 wherein the chainwheel further comprises:

12 two side disks smaller than the disk forming the chainwheel, having
13 respectively outer edges and mounted concentrically on opposite sides of the
14 disk such that the outer edges of the side disks form two annular shoulders
15 respectively on opposite sides of the chainwheel disk at the teeth; and

16 the at least one recess further comprises the two shoulders, and the
17 energy absorber further comprises two resilient annular rings mounted
18 respectively on the annular shoulders.

19 7. The silent and reduced vibration chainwheel as claimed in claim 3,
20 wherein the chainwheel further comprises:

21 two side disks smaller than the disk forming the chainwheel, having
22 respectively outer edges and mounted concentrically on opposite sides of the
23 disk such that the outer edges of the side disks form two annular shoulders
24 respectively on opposite sides of the chainwheel disk at the teeth; and

1 the at least one recess further comprises the two shoulders, and the
2 energy absorber further comprises two resilient annular rings mounted
3 respectively on the annular shoulders.

4 8. The silent and reduced vibration chainwheel as claimed in claim 4,
5 wherein the chainwheel further comprises:

6 two side disks smaller than the disk forming the chainwheel, having
7 respectively outer edges and mounted concentrically on opposite sides of the
8 disk such that the outer edges of the side disks form two annular shoulders
9 respectively on opposite sides of the chainwheel disk at the teeth; and

10 the at least one recess further comprises the two shoulders, and the
11 energy absorber further comprises two resilient annular rings mounted
12 respectively on the annular shoulders.

13 9. The silent and reduced vibration chainwheel as claimed in claim 1,
14 wherein

15 the chainwheel further comprises:

16 two side disks smaller than the disk forming the chainwheel, having
17 respectively outer edges and mounted concentrically on opposite sides of the
18 disk such that the outer edges of the side disks form two annular shoulders
19 respectively on opposite sides of the chainwheel disk;

20 the at least one recess is implemented with the two annular shoulders in
21 addition to multiple passages defined respectively in the teeth and a central
22 annular groove defined between the annular shoulders and passing through the
23 teeth; and

24 the energy absorber is implemented with three resilient annular rings

1 mounted respectively on the annular shoulders and in the central annular groove.
2 10. The silent and reduced vibration chainwheel as claimed in claim 9,
3 wherein the energy absorber further comprises multiple resilient rods mounted
4 respectively in the passages of the teeth.